WHAT IS CLAIMED:

1. A catalyst for the polymerisation of olefins of general formula:

$$R''(C_4R'_mC_5C_4R'_n)XMeQ$$

wherein X is an hetero-atom ligand with one or two lone pair electrons selected from the elements of Group VA or VIA which can be substituted or non-substituted: $(C_4R_m'C_5C_4R_n')$ is a symmetrically substituted, 3,6-substituted fluorenyl; R' is hydrogen or hydrocarbyl radical having from 1-20 carbon atoms, a halogen, an alkoxy, an alkoxy alkyl or an alkylamino or alkylsilyl radical, each R' may be the same or different and m and n independently are 1, 2, 3 or 4, with the proviso that the bilateral symmetry is maintained; R" is a structural bridge between X and the $(C_4R'_mC_5C_4R'_n)$ ring to impart stereorigidity; Q is a hydrocarbyl radical having 1-20 carbon atoms or is a halogen; Me is a Group IIIB, IVB, VB, or VIB metal as positioned in the Periodic Table of Elements; and Me can be in any of its theoretically possible oxidation states.

2. A catalyst according to claim 1, wherein the substituent of the fluorenyl radical is 3,6 di-*tert*-butyl-9-fluorenyl.

3. A catalyst according to claim 1, wherein the heteroatom ligand is selected from the group consisting of N, P, O and S.

4. A catalyst according to claim 1, wherein Me is selected from the group consisting of Ti, Zr and Hf.

5. A catalyst according to claim 1, wherein R" is preferably a silyl or hydrocarbyl biradical having at least one silicon or carbon atom to form the bridge.

6. A catalyst according to claim 5, wherein R" is dimethylsilyl.

7. A catalyst according to claim 1, wherein Q is selected from the group consisting of alkyl, aryl, alkenyl, alkylaryl and arylalkyl radicals.

8. A process for polymerising an olefin monomer to form a syndiotactic/atactic block polyolefin comprising:

a) selecting a catalyst of general formula:

$$R''(C_4R'_mC_5C_4R'_n)XMeQ$$

wherein X is an hetero-atom ligand with one or two lone pair electrons selected from the elements of Group VA or VIA which can be substituted or non-substituted: $(C_4R_m'C_5C_4R_n')$ is a symmetrically substituted, 3,6-substituted fluorenyl; R' is hydrogen or hydrocarbyl radical having from 1-20 carbon atoms, a halogen, an alkoxy, an alkoxy alkyl or an alkylamino or alkylsilylo radical, each R' may be the same or different and m and n independently are 1, 2 3 or 4, with the proviso that the bilateral symmetry is maintained; R" is a structural bridge between X and the $(C_4R'_mC_5C_4R'_n)$ ring to impart stereorigidity; Q is a hydrocarbyl radical having 1-20 carbon atoms or is a halogen; Me is a Group IIIB, IVB, VB, or VIB metal as positioned in the Periodic Table of Elements; and Me can be in any of its theoretically possible oxidation states;

b) introducing the catalyst into a polymerisation reaction zone containing an olefin monomer and maintaining the reaction zone under polymerisation reaction conditions; and

c) extracting a syndiotactic/atactic block polymer.

9. A process according to claim 8, wherein the monomer is propylene.

10. A syndiotactic/atactic block homopolymer of at α-olefin having 3 or more carbon atoms, obtainable according to a process as defined in claim 8.

11. A syndiotactic/atactic block homopolymer according to claim 10, which comprises a polypropylene.

12. A syndiotactic/atactic block homopolymer according to claim 10, wherein the fraction of the syndiotactic triads is at least 70 %.

13. A syndiotactic/atactic block copolymer of two or more α-olefin monomers obtainable by polymerising the α-olefin monomers in the presence of a catalyst of general formula:

$$R''(C_4R'_mC_5C_4R'_n)XMeQ$$

wherein X is an hetero-atom ligand with one or two lone pair electrons selected from the elements of Group VA or VIA which can be substituted or non-substituted: $(C_4R_m'C_5C_4R_n')$ is a symmetrically substituted, 3,6-substituted fluorenyl; R' is hydrogen or hydrocarbyl radical having from 1-20 carbon atoms, a halogen, an alkoxy, an alkoxy alkyl or an alkylamino or alkylsilylo radical, each R' may be the same or different and m and n independently are 1, 2 3 or 4, with the proviso that the bilateral symmetry is maintained; R'' is a structural bridge between X and the $(C_4R'_mC_5C_4R'_n)$ ring to impart stereorigidity; Q is a hydrocarbyl radical having 1-20 carbon atoms or is a halogen; Me is a Group IIIB, IVB, VB, or VIB metal as positioned in the Periodic Table of Elements; and Me can be in any of its theoretically possible oxidation states.